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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/852,826

05/10/2001

Deanna Lynn Quigg Brown

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5443

7590

12/15/2004

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EXAMINER

PHAN, MAN U

ART UNIT

PAPER NUMBER

2665

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/852,826

Applicant(s)

BROWN ET AL.

Examiner

Man Phan

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The application of Brown et al. for a "Method, system, and product for alleviating router congestion" filed 05/10/2001 has been examined. Claims 1-30 are pending in the application.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference signs mentioned in the detailed description on page 15, lines 7 and 12: reference (block 426). Correction is required.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC ' 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4, 14 and 24 recite limitations "said first computer system" in line 4, and "said marked packet" in line 7 (for claim 4). There is insufficient antecedent basis for these limitations in the claims.

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Claims 5, 15 and 25 recite limitations "said first and second computer system" in line 8, and "said connection", "said list" in line 12 (for claim 5). There is insufficient antecedent basis for these limitations in the claims.

In claims 9, 19 and 29 (line 16 for claim 9) which recite "is equal to or than" is not clear as to whether it is reciting a comparison between two value number or not.

Claims 9, 19 and 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "minimum" in the claims is a relative term which renders the claim indefinite. The term "minimum" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The claims provide limitation for calculating the packets transmission with a "minimum time", and it is not clear what constitutes such "minimum." For instance, is *zero* considered to be within the meaning of "minimum" and if so, is this intended ?

Claim Rejections - 35 USC ' 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application

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by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 3718 of this title before the invention thereof by the applicant for patent.

4. Claims 1-3, 11-13 and 21-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Hadi Salim et al. (US#6,535,482).

With respect to claims 21-23, Hadi Salim et al. (US#6,535,482) disclose all the subject matter now claimed. Hadi Salim discloses a packet routing apparatus for routing packets, in which a congestion monitor determines a degree of congestion, which is sent back to the source node, using an OSI network layer protocol. This enables the flow of packets from the source to be controlled more accurately to maintain high throughput with reduced probability of congestion (Col. 2, lines 47 plus). Hadi salim further teaches in Fig. 2 some of the principal actions of each of the elements in a network using TCP/IP. If there is severe congestion at router A, the packet may be discarded. If the router detects incipient congestion, an ISQ is sent back to the IP source. The IP source will interpret the ISQ and pass an indication up to the TCP source functions, notifying of the congestion at router A, on the flow to the TCP receiver at host B (See also Figs 5A,B; Col. 6, lines 3 plus and Col. 7, lines 35 plus). Network congestion may be controlled by executing processes to detect the congestion, to notify the congestion state to appropriate nodes in the network, and to adjust the injection of packets into the network in response to these notifications. Forward Explicit Congestion Notification (FECN) is one particular method of explicit congestion notification, as described in K. K. Ramakrishnan and S. Floyd, "A Proposal to add Explicit Congestion Notification (ECN) to IP," IETF RFC-2481, January, 1999, where congestion detected at a

network switch is signaled to the destination nodes of the data packets involved in the congestion. The destination nodes subsequently propagate this information to the respective source nodes. Destination node signaling as well as the subsequent source node signaling can occur in-band using congestion marker bits in the data packets themselves, or can occur out-of-band using congestion control packets dedicated to carrying congestion information.

Regarding claims 1-3, they are method claims corresponding to the apparatus claims 21-22 above. Therefore, claims 1-3 are analyzed and rejected as previously discussed with respect to claims 21-23.

With respect to claims 11-13, these claims differ from claims Hadi Salim in that the claims recited a computer program product for performing the same basis of steps and apparatus of the prior arts as discussed in the rejection of claims 21-23. It would have been obvious to a person of ordinary skill in the art to implement a computer program product in Hadi Salim for performing the steps and apparatus as recited in the claims with the motivation being to provide the efficient enhancement to processing packets, improving router congestion, and easy to maintenance, upgrade.

Claim Rejections - 35 USC ' 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the

prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 1038 and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 4-8, 14-18 and 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hadi Salim et al. (US#6,535,482) as applied to claims 1-3, 11-13 and 21-23 above, in view of Li et al. (US#6,741,555).

In so far, as understood with respect to claims 24-28, Hadi Salim et al.(US#6,535,482) and Li et al. (US#6,741,555) discloses techniques for improving transmission control protocol performance in network congestion, according to the essential features of the claims. Hadi Salim discloses the claims limitations as discussed in paragraph 6 above. However, these claims differ from the claims above in that the claims require the determination of marked packet from a router. In the same field of the endeavor, Li et al. discloses an Explicit Congestion Notification (ECN) method to avoid network congestion in a TCP/IP packet-

switched network. Such method comprises transmitting, at a source node, data packets to a destination node, via at least an intermediate node; determining, at the intermediate node, if an incipient congestion is encountered, setting a Congestion Experienced (CE) flag in each data packet to notify congestion; sending, at the destination node, an ECN-Echo acknowledgment packet back to the source node to inform congestion; reducing, at the source node, a congestion window and a transmission rate to avoid congestion; if the packet loss is due to congestion, re-transmitting, at the source node, only a lost packet to the destination node; alternatively, if the packet loss is due to transmission error, re-transmitting, the lost packet to the destination node, while increasing a round-trip timeout but maintaining the same congestion window (See Figs 2-5; Col. 4, lines 40 plus and Col. 7, lines 57 plus). Congestion detection processes executed by internal components of a network (such as routers and switches) infer congestion when internal network resources such as link bandwidth or network buffers are overloaded. For example, the DECbit congestion detection process detects congestion at a switch when the average size of the switch's output queues exceeds a predetermined threshold, as described in K. K. Ramakrishnan and S. Floyd, "A Proposal to add Explicit Congestion Notification (ECN) to IP," IETF RFC-2481, January, 1999 ("Ramakrishnan"). As described in S. Floyd and V. Jacobson, "Random Early Detection Gateways for Congestion Avoidance," IEEE/ACM Transactions on Networking, Vol. 1, No. 4, pp. 397-413, August 1993, the RED congestion detection process also uses the average output queue size to infer congestion, but uses two thresholds. Because congestion detection processes executed by network elements watch for particular events at individual network components, they are likely to be more precise in their information than processes executed

by end nodes. Moreover, they allow congestion to be detected earlier, even before it manifests as lost packets or changed latencies at network end nodes.

Regarding claims 4-8, they are method claims corresponding to the apparatus claims 24-28 above. Therefore, claims 4-8 are analyzed and rejected as previously discussed with respect to claims 24-28.

With respect to claims 14-18, these claims differ from claims Hadi Salim in that the claims recited a computer program product for performing the same basis of steps and apparatus of the prior arts as discussed in the rejection of claims 24-28. It would have been obvious to a person of ordinary skill in the art to implement a computer program product in Hadi Salim for performing the steps and apparatus as recited in the claims with the motivation being to provide the efficient enhancement to processing packets, improving router congestion, and easy to maintenance, upgrade.

One skilled in the art would have recognized the need for effectively and efficiently routing and processing of information in packet switching network, and would have applied Li' novel use of CE flag in each data packet to notify congestion into hadi Salim's teaching of the processing packets in TCP/IP network. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Li' enhancement of explicit congestion notification (ECN) for wireless network applications into Hadi Salim's congestion notification from router with the motivation being to provide a method and apparatus for routing and processing packets in TCP/IP network.

Allowable Subject Matter

8. Claims 9-10, 19-20 and 29-30 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C.112, 2nd paragraph, set forth in this office action, and if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for the indication of allowable subject matter: The closest prior art of record fails to disclose or suggest wherein in response to a determination that the current time is greater than the minimum time, the router for determining that the second packet was transmitted subsequently to the receipt of the marked packet; and in response to a determination that the current time is equal to or greater than the minimum time, the router for determining that the second packet was not transmitted subsequently to the receipt of the marked packet, as specifically recited in the claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The Belanger et al. (US#2003/0137938) is cited to show the method for reducing congestion in packet-switched networks.

The Hadi Salim et al. (US#6,625,118) is cited to show the receiver based congestion control.

The Jacobs et al. (US#2003/0107994) is cited to show the communications network

The Ghani et al. (US#6,215,769) is cited to show the enhanced acknowledgment pacing device and method for TCP connections.

The Lruutu et al. (US#6,219,713) is cited to show the method and apparatus for adjustment of TCP sliding window with information about network conditions.

The Takagi (US#2001/0036154) is cited to show the communication device and communication control method using lower layer data transmission order control at upper layer.

The Davies et al. (US#6,483,805) is cited to show the internet differentiated services service for transaction applications.

The Siu et al. (US#6,252,851) is cited to show the method for regulating TCP flow over heterogeneous networks.

The Bustini et al. (US#5,313,454) is cited to show the congestion control for cell networks.

The Nishimura et al. (US#6,754,200) is cited to show the rate control system of TCP layer.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Phan whose telephone number is (571) 272-3149.

The examiner can normally be reached on Mon - Fri from 6:00 to 3:00 EST. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached on (571) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

11. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to: (703) 305-9051, (for formal communications intended for entry)

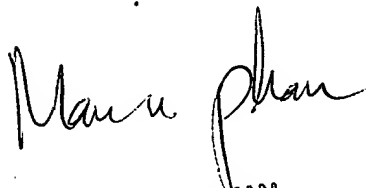
Or: (703) 305-3988 (for informal or draft communications, please label

"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive,
Arlington, VA., Sixth Floor (Receptionist).

Mphan

12/02/2004.


MAN U. PHAM
PRIMARY EXAMINER